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This paper provides an overview of the evolution of digital transmission in the copper access network from voice-band modems to Digital Subscriber Line (DSL) technologies. The various types of DSL technology are described. Copyright © 2001 John Wiley & Sons, Ltd.

2 ATM: retrospective on systems legacy: A perspective on how ATM lost controlSimon Crosby, Sean Rooney, Rebecca Isaacs, Herbert Bos
November 2002 **ACM SIGCOMM Computer Communication Review**, Volume 32 Issue 5**Publisher:** ACM PressFull text available:  [pdf\(106.57 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Contrary to the initial high expectations, ATM failed to become the universal network technology covering all services and running from the desktop to the backbone. This paper tries to identify the technological problems that contributed to this failure.

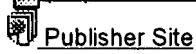
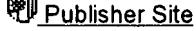
3 Design and implementation of a QoS oriented data-link control protocol for CBR traffic in wireless ATM networksH. Kim, S. K. Biswas, P. Narasimhan, R. Siracusa, C. Johnston
September 2001 **Wireless Networks**, Volume 7 Issue 5**Publisher:** Kluwer Academic PublishersFull text available:  [pdf\(236.74 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents a QoS oriented Data Link Control (DLC) framework for transporting Constant Bit Rate (CBR) traffic over wireless ATM links. Data link control is usually omitted in fixed ATM networks because cell corruption due to channel error is extremely rare for reliable media like copper wire and optical fiber. However, for wireless, higher bit error rates are quite common due to shadowing and other fading effects. The purpose of DLC in wireless is to provide error-free transport to the h ...

Keywords: CBR, Quality-of-Service, data-link control protocol, wireless ATM

4 A Flexible Virtual Platform for Computational and Communication Architecture**Exploration of DMT VDSL Modems**

Silvia Brini, Doha Benjelloun, Fabien Castanier

March 2003 Proceedings of the conference on Design, Automation and Test in Europe: Designers' Forum - Volume 2 DATE '03**Publisher:** IEEE Computer SocietyFull text available: [pdf\(253.00 KB\)](#)Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)[Publisher Site](#)

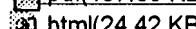
In this paper a high-level SoC architecture exploration of DMT (Discrete Multitone) VDSL transceivers (Very high speed Digital Subscriber Line) is presented. A flexible and complete virtual platform was developed for the purpose, exploiting the paradigm of "orthogonalization of concerns" (functionality independent from architecture) in the framework of Cadence VCC system level design tool. An accurate processor model, obtained through the back-annotation of profiling results on a target DSP core ...

5 ATM: retrospective on systems legacy: ATM: a retrospective on systems legacy or "a**technology with a fabulous future behind it?"**

Jon Crowcroft, Derek McAuley

November 2002 **ACM SIGCOMM Computer Communication Review**, Volume 32 Issue 5**Publisher:** ACM PressFull text available: [pdf\(65.45 KB\)](#)Additional Information: [full citation](#), [abstract](#), [index terms](#)

The following four papers were selected from submissions for a proposed workshop that was to have been held during the 2002 ACM SIGCOMM Conference. Due to time, we cancelled the event, but the papers capture some of the past, present and future lessons to be gleaned from the whole ATM experience, and we felt that these lessons should be provided with a forum.

6 Forum September 1999 **Communications of the ACM**, Volume 42 Issue 9**Publisher:** ACM PressFull text available: [pdf\(157.63 KB\)](#)Additional Information: [full citation](#), [index terms](#)**7 Plenary Panel: Is streaming media becoming mainstream?**

Savitha Srinivasan, Dulce Ponceleon, Dick Bulterman, Edward Delp, Alexandros Eleftheriadis, Pablo Fernicola, Rob Lanphier, See-Mong Tan

October 2001 **Proceedings of the ninth ACM international conference on Multimedia MULTIMEDIA '01****Publisher:** ACM PressFull text available: [pdf\(84.65 KB\)](#)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**8 Session I: QoS in ad hoc and infra-structure based wireless networks: TranScaling: a****video coding and multicasting framework for wireless IP multimedia services**

Hayder Radha

July 2001 **Proceedings of the 4th ACM international workshop on Wireless mobile multimedia WOWMOM '01****Publisher:** ACM PressFull text available: [pdf\(394.32 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The convergence of the Internet with new wireless and mobile networks is creating a whole new level of heterogeneity in multimedia communications. This increased level of heterogeneity emphasizes the need for scalable and adaptive video solutions both for coding and transmission purposes. However, in general, there is an inherent tradeoff between the level of scalability and the quality of scalable video streams. In other words, the higher the bandwidth variation, the lower the overall video qua ...

9 Features: The Family Dynamics of 802.11

May 2003 **Queue**, Volume 1 Issue 3

Publisher: ACM Press

Full text available:  [pdf\(622.71 KB\)](#)

Additional Information: [full citation](#), [citations](#), [index terms](#)

 [html\(41.31 KB\)](#)



10 Advertising and Security for E-Commerce: Protecting electronic commerce from distributed denial-of-service attacks

José Brustoloni

May 2002 **Proceedings of the 11th international conference on World Wide Web WWW '02**

Publisher: ACM Press

Full text available:  [pdf\(133.78 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

It is widely recognized that distributed denial-of-service (DDoS) attacks can disrupt electronic commerce and cause large revenue losses. However, effective defenses continue to be mostly unavailable. We describe and evaluate VIPnet, a novel value-added network service for protecting e-commerce and other transaction-based sites from DDoS attacks. In VIPnet, e-merchants pay Internet Service Providers (ISPs) to carry the packets of the e-merchants' best clients (called VIPs) in a privileged class ...

Keywords: denial of service, electronic commerce, quality of service



11 NetNews: satellites: the new bandwidth-busters?

Dennis Fowler

November 1998 **netWorker**, Volume 2 Issue 5

Publisher: ACM Press

Full text available:  [pdf\(234.01 KB\)](#)

Additional Information: [full citation](#), [index terms](#)



12 ATM: retrospective on systems legacy: A retrospective view of ATM

Charles Kalmanek

November 2002 **ACM SIGCOMM Computer Communication Review**, Volume 32 Issue 5

Publisher: ACM Press

Full text available:  [pdf\(222.98 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

ATM was the focus of active research and significant investment in the early to mid 1990's. This paper discusses several visions for ATM prevalent at the time, and analyzes how ATM evolved during this period. The paper also considers the implications of this history for current connection-oriented technologies, such as optical transport networks and MPLS.

Keywords: ATM, MPLS, flow switching, transport networks

13 An integrated platform for reliable multicast support in the regional mobile-IP environment



Hassan Omar, Tarek Saadawi, Myung Lee

April 2002 **ACM SIGMOBILE Mobile Computing and Communications Review**, Volume 6 Issue 2

Publisher: ACM Press

Full text available: [pdf\(167.80 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Supporting reliable delivery of multicast datagrams, in IP networks, may necessitate the introduction of new elements and features. Further, considerable additional signaling may be required to support this service. Providing a platform that efficiently supports IP multicast delivery, in an environment where the multicast group members frequently change their locations, is a challenge for systems supporting mobility. In this paper, we describe a platform that allows the application of an interna ...

14 Test results of the commercial internet multimedia trials



Mark Baugher, Saib Jarrar

January 1998 **ACM SIGCOMM Computer Communication Review**, Volume 28 Issue 1

Publisher: ACM Press

Full text available: [pdf\(958.81 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

This paper reports the test results of applications and services from the Commercial Internet Multimedia Trials. The Trials were a twelve-month effort by three companies to evaluate the product readiness of multimedia applications and services in business environments by supporting multimedia services on production IP networks. The test beds were enabled for IP multicast routing; one of the test beds was enabled for RSVP. The results of our RSVP tests and user surveys are reported, and some of i ...

15 A multiqueue service room MAC protocol for wireless networks with multipacket reception



Qing Zhao, Lang Tong

February 2003 **IEEE/ACM Transactions on Networking (TON)**, Volume 11 Issue 1

Publisher: IEEE Press

Full text available: [pdf\(847.78 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

An adaptive medium-access control (MAC) protocol for heterogeneous networks with finite population is proposed. Referred to as the multiqueue service room (MQSR) protocol, this scheme is capable of handling users with different quality-of-service (QoS) constraints. By exploiting the multipacket reception (MPR) capability, the MQSR protocol adaptively grants access to the MPR channel to a number of users such that the expected number of successfully received packets is maximized in each slot. The ...

Keywords: medium-access control (MAC), multipacket reception (MPR), random-access network

16 Functional divisions in the Piglet multiprocessor operating system



Steve Muir, Jonathan Smith

September 1998 **Proceedings of the 8th ACM SIGOPS European workshop on Support for composing distributed applications EW 8**

Publisher: ACM Press

Full text available: [pdf\(593.67 KB\)](#) Additional Information: [full citation](#), [citations](#), [index terms](#)

17 Traffic descriptor mapping and traffic control for frame relay over ATM network

Sudhir S. Dixit, Sharad Kumar

February 1998 **IEEE/ACM Transactions on Networking (TON)**, Volume 6 Issue 1**Publisher:** IEEE PressFull text available: [pdf\(345.04 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)**Keywords:** ATM, cell relay, frame relay, quality of service, traffic management**18 Voice over IP**

Upkar Varshney, Andy Snow, Matt McGivern, Christi Howard

January 2002 **Communications of the ACM**, Volume 45 Issue 1**Publisher:** ACM PressFull text available: [pdf\(113.77 KB\)](#) [html\(34.89 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

How can voice over the Internet claim a greater share of the worldwide phone market from the voice infrastructure dominated for more than 100 years by the public-switched telephone network?

19 Collaborative proxy system for distributed Web content transcoding

Valeria Cardellini, Philip S. Yu, Yun-Wu Huang

November 2000 **Proceedings of the ninth international conference on Information and knowledge management CIKM '00****Publisher:** ACM PressFull text available: [pdf\(251.02 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**20 A quick check of network performance**

Jeffrey T. Hicks, John Q. Walker

January 2001 **International Journal of Network Management**, Volume 11 Issue 1**Publisher:** John Wiley & Sons, Inc.Full text available: [pdf\(372.57 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Have you ever tried to measure the response time across a network? Do you sometimes wonder what throughput rate you're getting over a particular link? Are you concerned about the impact of adding streaming multimedia traffic to a network? Would you like to know the exact route your data is taking? Individual tools are available to measure the throughput and response time of your applications, trace a network route, or test a network's capacity for handling ...

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Relevance scale

1 Quality of service and mobility for the wireless internet

J. Antonio García-Macías, Franck Rousseau, Gilles Berger-Sabbatel, Leyla Toumi, Andrzej Duda

July 2001 **Proceedings of the first workshop on Wireless mobile internet WMI '01****Publisher:** ACM PressFull text available: [pdf\(776.58 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Our paper explores the issue of how to provide appropriate quality of Service mechanisms closely integrated with flexible mobility management in wireless local area networks. We consider them as access networks of choice for the high performance Wireless Mobile Internet. We present a hierarchical QoS architecture that extends *Differentiated Services (DiffServ)* to mobile hosts in a wireless environment. Our approach is based on controlling several parameters of a wireless LAN cell ...

Keywords: 802.11 WLAN, DiffServ, IPv6, QoS support in wireless access networks, handover and admission control, micro-mobility management mechanisms

2 A new transport protocol for broadcasting/multicasting MPEG-2 video over wireless ATM access networks

Hairuo Ma, Magda El Zarki

July 2002 **Wireless Networks**, Volume 8 Issue 4**Publisher:** Kluwer Academic PublishersFull text available: [pdf\(201.01 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Because of the telecommunications de-regulation act and progress in wireless technologies, we will see the co-existence of heterogeneous broadband access infrastructures in the broadband video service industry in the near future. In this paper, we addressed the error control issue when transmitting MPEG-2 video streams over wireless access networks for broadband video broadcast or multicast services. An end-to-end transport protocol based on ATM and wireless ATM technologies is proposed. For vid ...

Keywords: FEC, MPEG-2 broadcast/multicast, WATM, header redundancy, real-time, video quality

3 HAWAII: a domain-based approach for supporting mobility in wide-area wireless networks



Ramachandran Ramjee, Kannan Varadhan, Luca Salgarelli, Sandra R. Thuel, Shie-Yuan Wang, Thomas La Porta

June 2002 **IEEE/ACM Transactions on Networking (TON)**, Volume 10 Issue 3

Publisher: IEEE Press

Full text available: [pdf\(391.04 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Mobile IP is the current standard for supporting macromobility of mobile hosts. However, in the case of micromobility support, there are several competing proposals. In this paper, we present the design, implementation, and performance evaluation of HAWAII, a domain-based approach for supporting mobility. HAWAII uses specialized path setup schemes which install host-based forwarding entries in specific routers to support intra-domain micromobility. These path setup schemes deliver excellent perf ...

Keywords: handoff, micromobility, mobile IP, wireless

4 Design and validation of QoS aware mobile internet access procedures for heterogeneous networks



Giuseppe Bianchi, Nicola Belfari-Melazzi, Pauline M. L. Chan, Matthias Holzbock, Y. Fun Hu, Axel Jahn, Ray E. Sheriff

February 2003 **Mobile Networks and Applications**, Volume 8 Issue 1

Publisher: Kluwer Academic Publishers

Full text available: [pdf\(573.73 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, the requirements for personal environments mobility are addressed from terminal and network perspectives. Practical mobility and Quality of Service (QoS) aware solutions are proposed for a heterogeneous network, comprising of satellite and terrestrial access networks connected to an IP core network. The aim, in adopting a heterogeneous environment, is to provide global, seamless service coverage to a specific area, allowing access to services independently of location. An importan ...

Keywords: QoS, admission control, handover management, heterogeneous networks, laboratory demonstrator, mobile IP

5 A call admission and control scheme for quality-of-service (QoS) provisioning in next generation wireless networks



S. K. Das, R. Jayaram, N. K. Kakani, Sanjoy K. Sen

January 2000 **Wireless Networks**, Volume 6 Issue 1

Publisher: Kluwer Academic Publishers

Full text available: [pdf\(201.98 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We propose a framework for quality-of-service provisioning for multimedia services in next generation wireless access networks. This framework aims at providing a differentiated treatment to multimedia traffic flows at the link layer, which can be broadly classified as real-time or delay-sensitive; and non-real-time or delay-tolerant. Various novel schemes are proposed to support the differential treatment and guarant ...

6 Market based bandwidth allocation policies for QoS control in broadband networks



D. Reininger, D. Raychaudhuri, M. Ott
 October 1998 **Proceedings of the first international conference on Information and computation economies ICE '98**
 Publisher: ACM Press
 Full text available: [pdf\(1.10 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: MPEG video, broadband service pricing, market-based control, quality-of-service, softness profiles

7 [Havana: supporting application and channel dependent QoS in wireless packet networks](#)



Javier Gomez, Andrew T. Campbell
 January 2003 **Wireless Networks**, Volume 9 Issue 1
 Publisher: Kluwer Academic Publishers

Full text available: [pdf\(325.55 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

For wireless channels, interference mitigation techniques are typically applied at the packet transmission level. In this paper, we present the Havana framework which supports *integrated adaptive-QoS* in wireless packet networks by responding to impairments over multiple time scales that are present at the flow/session level. The Havana framework is based on three different control mechanisms that operate over distinct adaptation time scales. At the packet transmission time scale, a packet ...

Keywords: QoS, adaptive wireless networks

8 [LMDS/LMCS hub interconnection alternatives and multiple access issues](#)



G. M. Stamatelos, V. N. Koukoulidis
 May 2000 **Wireless Networks**, Volume 6 Issue 3
 Publisher: Kluwer Academic Publishers

Full text available: [pdf\(149.41 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

LMDS/LMCS is a broadband wireless local loop, millimeter‐wave alternative to emerging integrated multiservice access networks. Significantly large amounts of bandwidth – in the order of one GHz of spectrum – are made available to residential subscribers or supported business users respectively that employ highly directional antennas and signal polarization to establish communication with a central hub. Besides the requirement for dynamic bandwidth allocation capabilities, t ...

9 [A signaling architecture for wireless ATM access networks](#)



Nikos H. Loukas, Nikos I. Passas, Lazaros Merakos, Iakovos S. Venieris
 March 2000 **Wireless Networks**, Volume 6 Issue 2

Publisher: Kluwer Academic Publishers
 Full text available: [pdf\(350.88 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A multiservice wireless Asynchronous Transfer Mode <math>ATM> access system is considered from a signaling protocol viewpoint. In an attempt to generalize and extend results and experiences obtained from the specification, design, and implementation of fixed ATM‐based access networks, we extend the concept of the broadband V interface <math>VB> referred to as <math>VB> for application to wireless ATM access networks. The proposed architecture follows the signaling structure of Broadband ...

◆ **ATM: retrospective on systems legacy: A retrospective view of ATM** 

Charles Kalmanek

November 2002 **ACM SIGCOMM Computer Communication Review**, Volume 32 Issue 5

Publisher: ACM Press

Full text available:  [pdf\(222.98 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

ATM was the focus of active research and significant investment in the early to mid 1990's. This paper discusses several visions for ATM prevalent at the time, and analyzes how ATM evolved during this period. The paper also considers the implications of this history for current connection-oriented technologies, such as optical transport networks and MPLS.

Keywords: ATM, MPLS, flow switching, transport networks

11 **System applications and experience: On the introduction of quality of service** 

◆ **awareness in legacy distributed applications**

R. Canonico, M. D'Arienzo, B. Fadini, S. P. Romano, G. Ventre

July 2002 **Proceedings of the 14th international conference on Software engineering and knowledge engineering SEKE '02**

Publisher: ACM Press

Full text available:  [pdf\(314.31 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

A number of distributed applications require communication services with Quality of Service (QoS) guarantees. Work undertaken within the Internet Engineering Task Force (IETF) has led to the definition of novel architectural models for the Internet with QoS support. According to these models, the network has to be appropriately configured in order to provide applications with the needed performance guarantees. In a first proposal, called Integrated Services, applications need to explicitly inter ...

Keywords: distributed applications, programming language, quality of service

12 **Performance analysis of a multimedia synchronization mechanism based on buffer** 

◆ **compensation in a mobile environment**

Aurelio La Corte, Alfio Lombardo, Sergio Palazzo

January 2000 **ACM SIGMOBILE Mobile Computing and Communications Review**, Volume 4 Issue 1

Publisher: ACM Press

Full text available:  [pdf\(1.63 MB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

In a mobile communication system network performance varies considerably when handovers occur. This occurrence strongly impacts the design of the buffer compensation based techniques usually used in the fixed communication environments for minimizing probability of asynchronism between the different media composing a multimedia session. This paper provides an analytical paradigm for dimensioning synchronization buffers at the interface node between the wired and the wireless networks when networ ...

13 **Architecture and experimental results for quality of service in mobile networks using RSVP and CBQ** 

Indu Mahadevan, Krishna M. Sivalingam

May 2000 **Wireless Networks**, Volume 6 Issue 3

Publisher: Kluwer Academic Publishers

Full text available:  [pdf\(262.65 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Efforts are underway to enhance the Internet with Quality of Service & QoS;

capabilities for transporting real-time data. The issue of wireless networks and mobile hosts being able to support applications that require QoS has become very significant. The ReSerVation Protocol (RSVP) provides a signaling mechanism for end-to-end QoS negotiation. RSVP has been designed to work with wired networks. To make RSVP suitable for wireless networks, changes need to be ...

14 A utility-based approach for quantitative adaptation in wireless packet networks

Raymond R.-F. Liao, Andrew T. Campbell

September 2001 **Wireless Networks**, Volume 7 Issue 5

Publisher: Kluwer Academic Publishers

Full text available:  [pdf\(347.29 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper assesses the state-of-the-art in Quality-of-Service (QoS) adaptive wireless networks and proposes new adaptation techniques that better suit application specific needs. The contribution of the paper is as follows: we propose an adaptive service comprising (i) *bandwidth utility functions*, which capture the adaptive nature of mobile applications in terms of the range of bandwidth over which they prefer to operate; and (ii) *adaptation scripts*, which enable adaptive mobile a ...

Keywords: adaptive wireless service, bandwidth utility function, utility-fair resource management

15 Session I: QoS in ad hoc and infra-structure based wireless networks: Voice

 **transmission in an IEEE 802.11 WLAN based access network**

Andreas Köpsel, Adam Wolisz

July 2001 **Proceedings of the 4th ACM international workshop on Wireless mobile multimedia WOWMOM '01**

Publisher: ACM Press

Full text available:  [pdf\(246.56 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

IEEE 802.11 contains a mechanism for transmission of data with realtime constraints known as *Point Coordination Function*. This supplementary medium access protocol resides on top of the basic medium access mechanism *Distributed Coordination Function* and uses a centralized polling approach. Due to the complexity of a PCF implementation and the predicted inefficiency of the PCF several proposals have been presented for providing QoS support without the need of a centralized sc ...

Keywords: DCF, IEEE 802.11, PCF, WLAN, best-effort, real-time, scheduling, voice transmission

16 Performance: A QoS service for IP video applications on demand over DTM

 **Cláudia J. Barenco, Arturo Azcorra Saloña, José Ignacio Moreno**

April 2001 **ACM SIGCOMM Computer Communication Review**, Volume 31 Issue 2 supplement

Publisher: ACM Press

Full text available:  [pdf\(2.26 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

The Differentiated Services model (DiffServ) provides a great flexibility in defining a variety of services through PHBs (*Per Hop Behaviors*) and traffic conditioners. It fits in well with the Integrated Services model (IntServ), jointly offering features such as: QoS signaling; admission control; channel management; assignment of resources (buffer and bandwidth); sorter configuration; and establishment of traffic agreements. With this integration you can have a scalable, flexible, and dyn ...

Keywords: DTM, DiffServ, IntServ, QoS, video on demand

17 Open base situation transport (OBAST)architecture



Phillip D. Neumiller, Peter L. Lei, Michael L. Needham

July 2000 **ACM SIGMOBILE Mobile Computing and Communications Review**, Volume 4

Issue 3

Publisher: ACM Press

Full text available:  [pdf\(1.08 MB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

This paper outlines the requirements for a set of open IP based protocols enabling seamless mobility across diverse radio access networks. We begin by stating some architectural tenets upon which the requirements for the OBAST protocol set are based. Furthermore, what the authors currently believe to be the eventual desirable wireless Internet architecture is described. This architecture is shown to enable a common protocol set that we refer to as the open base station transport (OBAST) protocol ...

18 QoS performance bounds and efficient connection admission control for heterogeneous services in wireless cellular networks



Dongmei Zhao, Xuemin Shen, Jon W. Mark

January 2002 **Wireless Networks**, Volume 8 Issue 1

Publisher: Kluwer Academic Publishers

Full text available:  [pdf\(277.81 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Quality-of-Service (QoS) performance and connection admission control (CAC) for heterogeneous services in wireless multiple access networks are investigated. The heterogeneous services include constant bit rate (CBR), variable bit rate (VBR) and available bit rate (ABR) services. Multiple access control is handled by a polling-based scheme with non-preemptive priority. Tight delay variation (jitter) bounds for CBR connections and delay bounds for VBR connections are derived. A CAC scheme based o ...

Keywords: Quality-of-Service, cellular networks, connection admission control, multiple access control, performance bound

19 QoS control in wireless ATM



Youssef Iraqi, Raouf Boutaba, Alberto Leon-Garcia

June 2000 **Mobile Networks and Applications**, Volume 5 Issue 2

Publisher: Kluwer Academic Publishers

Full text available:  [pdf\(160.13 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

20 Session I: QoS in ad hoc and infra-structure based wireless networks: TranScaling: a



video coding and multicasting framework for wireless IP multimedia services

Hayder Radha

July 2001 **Proceedings of the 4th ACM international workshop on Wireless mobile multimedia WOWMOM '01**

Publisher: ACM Press

Full text available:  [pdf\(394.32 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The convergence of the Internet with new wireless and mobile networks is creating a whole new level of heterogeneity in multimedia communications. This increased level of heterogeneity emphasizes the need for scalable and adaptive video solutions both for coding and transmission purposes. However, in general, there is an inherent tradeoff between the level of scalability and the quality of scalable video streams. In other words,

the higher the bandwidth variation, the lower the overall video qua ...

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S2	345731	thomas.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53
S3	32	cassanova.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53
S4	7118	jeffery.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53
S5	182	shrum.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53
S6	26004	edgar.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53
S7	25065	wright.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53

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S8	104169	steven.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53
S9	83965	zhang.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53
S10	103870	li.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:53
S12	1	S3 and S4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:54
S13	22	S5 and S6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:54
S14	488	S7 and S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:54
S15	8545	S9 and S10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:54

EAST Search History

S11	35	S1 and S2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:58
S16	2864	bellsouth.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:58
S17	7	S14 and S16	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:58
S18	4	S15 and S16	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 06:58
S19	443	S16 and (quality bandwidth)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 07:32
S20	2648	(709/226).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/06/21 07:40
S21	14607	(modif\$4 chang\$4 updat\$4) near4 ((quality adj service) (class adj service) bandwidth QoS)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 07:44

EAST Search History

S22	310	S21 same (DSLAM CPE BRAS RAN NPS ASP ISP PPP PPPoE aggregator concatenator DSL L2TP LAC)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 07:46
S23	277	S22 and @PY>"1990"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 07:52
S25	3286	asp same (application adj service adj provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 07:53
S26	14	bras same (broadband adj access adj server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 07:54
S27	14	bras same (broad\$band adj access adj server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 07:54
S24	39	ani adj protocol	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 08:37

EAST Search History

S28	0	(ISP NSP ASP ((application internet wan web content service) near (server provider))) near3 (send\$4 request\$4 ask\$4 requir\$4 provision\$4) near3 (new modif\$4 updat\$4 chang\$4 dynamic\$4) near3 (qos quality class bandwidth) near3 ((access dsl bandwidth quality qos) near2 (manager controller policy))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 09:42
S29	7	(ISP NSP ASP ((application internet wan web content service) near (server provider))) with (send\$4 request\$4 ask\$4 requir\$4 provision\$4) with (new modif\$4 updat\$4 chang\$4 dynamic\$4) near3 (qos quality class bandwidth) with ((access dsl bandwidth quality qos) near2 (manager controller policy))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 09:52
S30	8	((ISP NSP ASP ((application internet wan web content service) near (server provider))) with (send\$4 request\$4 ask\$4 requir\$4 provision\$4) with (new modif\$4 updat\$4 chang\$4 dynamic\$4) near3 (qos quality class bandwidth) with ((management manager controller policy))) not S29	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 10:03
S31	19	((ISP NSP ASP ((application internet wan web content service) near (server provider))) with (send\$4 request\$4 ask\$4 requir\$4 provision\$4) with (new modif\$4 updat\$4 chang\$4 dynamic\$4) near3 (qos quality class bandwidth) same ((management manager controller policy))) not (S29 or S30)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 10:09
S32	172	DSL same ip same QoS\$	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 10:51

EAST Search History

S34	120	S32 not S33	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 11:00
S33	52	DSL with ip with QoS\$	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 11:22
S36	56	S35 same (updat\$4 writ\$4 rewrit\$4 stor\$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 12:04
S35	509	(send\$4 forward\$4 transmit\$4) with (qos quality bandwidth) with (CPE ((user local customer) adj2 (equipment modem switch router)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 12:22
S38	286	S35 and ("370".clas. "709".clas.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 12:22
S39	248	S38 not S36	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 12:53
S40	73	(rsvp ((resource bandwidth) near reservat\$4)) same (DSL DSLAM BRAS L2TP NSP)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 13:12

EAST Search History

S41	125	application adj2 request adj2 (qos bandwidth quality)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 13:13
S42	150	application adj2 request\$4 adj2 (qos bandwidth quality)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 14:11
S44	2788	S43 not (S27 S29 S30 S31 S33 S34 S40 S42)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 14:13
S43	2937	(QoS quality) same ((access adj (network server)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 14:14
S45	114	(QoS) same ((access adj (server)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/21 14:14
S46	2	("20040044789").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/06/22 07:20
S47	149	((aggregator concatenator) near3 (PPP DSL L2TP PPPoE connection session))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:23

EAST Search History

S48	9	((aggregator concatenator) near3 (PPP DSL L2TP PPPoE connection session)) same (QoS quality bandwidth jitter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:26
S50	59	S49 not S48	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:27
S49	68	((aggregator concatenator) same (PPP DSL L2TP PPPoE connection session)) same (QoS quality bandwidth jitter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:39
S51	259	((concentrator) same (PPP DSL L2TP PPPoE connection session)) same (QoS quality bandwidth jitter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:40
S52	52	((concentrator) near3 (PPP DSL L2TP PPPoE connection session)) same (QoS quality bandwidth jitter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:40
S53	52	S52 not S50	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:40
S54	64	((concentrator) same (PPP DSL L2TP PPPoE session)) same (QoS quality bandwidth jitter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:41

EAST Search History

S55	13	((concentrator) near4 (PPP DSL L2TP PPPoE session)) same (QoS quality bandwidth jitter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:46
S56	51	S54 not S55	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/22 07:46